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THE CHARACTER OF MODERN SCIENCE, OR, THE MISSION OF THE EDUCATED MAN.

AN ADDRESS

DELIVERED BEFORE THE

ALUMNI ASSOCIATION

OF

COLUMBIAN COLLEGE,

JULY 21, 1852.

BY HON. FREDERICK P. STANTON,
OF TENNESSEE.

WASHINGTON:
PRINTED BY ROBERT A. WATERS.
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HON. FREDERICK P. STANTON.

SIR: At a meeting of the ALUMNI ASSOCIATION of Columbian College, held on the evening of the twenty-first instant, it was unanimously "Resolved, That the thanks of this Association be tendered to the Hon. F. P. Stanton for his very excellent and able address delivered before the Association this evening, and that a copy thereof be respectfully solicited for publication."

I have been honored by being appointed the medium of communicating to you the expression of thanks and the request embodied in the above resolution. Allow me to add my personal thanks and solicitations, to the wish of the Association, and, with the hope that you will acquiesce therein, to remain with the highest respect and esteem,

Your very obedient servant,

W. B. WEBB.

WASHINGTON CITY, *July* 22*d*, 1852.

WASHINGTON, 23*d July*, 1852.

SIR: I have the honor to acknowledge the receipt of yours of the 22d instant, conveying to me information of the resolution of the Alumni Association and requesting a copy of my address for publication.

Appreciating the value of your estimate of my production, and grateful for the compliment it implies, I send you a copy according to the request of the Society, although I am conscious that a critical examination of it will tend only to diminish the estimate they have placed upon it.

I am, very respectfully,

Your obedient servant,

FRED. P. STANTON.

W. B. WEBB, ESQ.,
Washington City, D. C.

ADDRESS.

—o—

I have undertaken a task, gentlemen, for the due performance of which I have had as little leisure, as I am conscious of possessing ability. Peculiar circumstances made my acquaintance at the College so slight, that I have none of those agreeable reminiscences which would naturally find expression on the present occasion, and which would serve so well to relieve the tedium of an unpretending address. Besides, since a very early age, I have been engaged in the active duties of life under such conditions, that I have had little opportunity for the cultivation of those branches of learning, which would serve at least to adorn, if not to constitute entirely, the staple of such a production as you might reasonably expect from one of the Alumni of Columbian College.

But in the absence of those friendly ties which naturally grow up in the intimacy of College life, when we tread together the flowery paths of literature, or with severer toil, struggle, hand in hand, along the rock-built and star-lit heights of modern science, there is yet another bond of sympathy to unite us, as strong, as true, as natural, as that which springs from early association in the pursuit of knowledge. I speak of that common feeling—I may well say, that common experience—among educated men, that they are destined to occupy the foremost rank in society, and in a great measure, to control its impulses, and give direction to its efforts—that they are entrusted with a holy mission, to be faithfully fulfilled for the benefit of mankind, and that they are mutually responsible for the correct exercise of the power which knowledge imparts. The enlightened man, who feels the whole importance of his position, cannot fail to be sensible of the tie which connects him with every other member of his own class, and which produces a *solidarity* of interests and aims, requiring mutual confidence, support, and co-operation. A

generous and self-sacrificing spirit, looking to higher aims than mere personal aggrandizement or selfish enjoyment, and therefore seeking association for the development of good, is the characteristic of that man whose mind has been awakened by the electric touch of truth, to behold nature, physical and moral, in all the sublime simplicity and benevolence of her divine laws. This natural connexion among educated men—this broad sympathy which makes of them one brotherhood, imbued with the same noble thoughts and bent upon achieving the same lofty puposes, may well serve to supply the place of those warmer and more pleasing attachments which spring from youthful association, at school or in college. Starting with this conviction, and feeling its influence supreme over my own mind and heart, I shall proceed at once to the subject which I have chosen for my brief address—that is, to mark the CHARACTER AND TENDENCY of modern science, and thus to explore (rapidly and imperfectly it may be) *the field in which lies the mission of the educated man.*

In entering upon this theme, I pause for a moment to make some distinctions which seem to me to be necessary, in order to a clear and perfect understanding of the ideas which it is my purpose to present. In the first place, then, by the term "*educated man,*" I do not mean the man of mere learning, who has simply hoarded up the thoughts of others and appropriated them to his own use. I am indeed very far from undervaluing even these important acquisitions. But I mean to characterize the man, who, having obtained the leading elements of knowledge, has been trained in addition, to see with his own eyes and think with his own thoughts, and not merely to see and think through the medium of what other men have believed and recorded. It follows, therefore, that my definition of the educated man, highly as I prize the advantages of college discipline and instruction, would not necessarily imply the enjoyment of these invaluable opportunities. The man whom nature has endowed with a strong mind and an ardent love of knowledge —the man of independent thought, who pursues his investigations by the light of that torch which God has placed in his own reason—this man has, in a thousand instances, outstripped his brother in

the race of intellect, though the latter may have been tutored by the best masters and with the most assiduous and unwearied care.

Nor, in the second place, when I speak of educated men as a class, do I intend the inference that their interests are distinct from those of their less favored brethren, or that their rights, social or political, are or ought to be, superior. I do indeed believe in the nobility of genius and of virtue—of intellectual and of moral strength. To these, all men of pure hearts and good purposes will spontaneously do homage; and in a natural, uncorrupted state of society, such qualities will necessarily and inevitably command respect and exercise authority. But this will follow only because these virtues are the gift of God for the benefit of all, and because he who truly possesses them will so use them—not for his own individual, so much as for the general good. Otherwise, there would be a fatal antagonism between the two classes, in which the man of knowledge would always domineer tyranically over his weaker and more ignorant brother. Too often in the history of mankind, and even at this day, in too many social and national organizations, is the superiority of intellect made the instrument of oppression and injustice. But in these instances the moral element is wanting, and the blessings of knowledge are perverted from the purpose for which they were intended. Instead of applying the authority, with which heaven has clothed them, to the noble purpose of improving the condition of all, imparting a portion of their own light and strength to the weaker and less enlightened, they are used only as the ladders, by which pride, ambition, and selfishness seek to mount up to greatness upon the shoulders of the mass of mankind. It is not in such a sense that I speak of educated men as being entitled to the foremost rank in society; but I place them there, because they have the capacity to do infinite good and the honorable opportunity to devote themselves, with generous and disinterested zeal, to perform the great duty to which that capacity and that opportunity, by the only true "divine right," appoint them.

Nor is this class so definite and distinct in its character, as to stand out from the rest of the community, isolated and unconnected. On the contrary, the scale of intellect runs up, from the lowest

to the highest, by regular gradations; from the unlettered clown, whose ignorance may place him but little above idiotcy, to the most exalted and resplendent genius. Thus the chain of human sympathy is maintained in perfect continuity, and no man has yet appeared, so far above his fellows, as to have been unapproached in his mental power. Newton had his Leibnitz—Homer has been followed by Milton and Shakespeare—Alexander by Cæsar and Napoleon, and all of them were contemporaneous with others, whom, doubtless, similar opportunities might have exhibited in the same splendor of intellect. In modern times, especially, the tendency of things is strongly towards equality. Knowledge, to a certain extent, seems to pervade the whole civilized race, and to descend, from generation to generation, in the very organization of man, accumulating power as it goes. It is broadly diffused among the masses of mankind, and the distinction between the learned and the unlearned is every day growing less. But there will ever be an eternal distinction between the man of independent and original thought, and him who is only the servile imitator of other men's acts and the avaricious gatherer of their ideas. And so long as social institutions and human nature remain the same as now, there will also be a line sufficiently broad and distinct, separating men of liberal education from those of smaller capacity or of limited opportunities, though the extremes of the two classes may insensibly run into each other.

Having thus attempted briefly to define what I understand to be the true character and position of the educated man, I proceed to take a rapid glance over that illimitable field of action, in which are to be found all his resources, and all the high and noble aims, towards which his labors are directed.

The earliest impressions upon the human mind are from the outer world. Consequently the knowledge of physical phenomena is the basis of all education. The faculties of thought are first aroused to action by the information of the senses; and from the simplest act of perception, by gradual development, the most complex operations of intellect are eventually produced. The moral sense, and all the social sciences which are founded upon it, though they have their

origin and fundamental principles in the very organization of the human soul as one of its primitive necessities, are, nevertheless, subsequent in their development to the ideas of physical existence and of mathematical and dynamic relations, and, to some extent, are dependent upon them. In any notice therefore of these two grand divisions of human knowledge, the first place, in the order of time as well as of dependence, must be assigned to the physical sciences. Hence it is that modern systems of education begin to be based upon the principle, that children ought first to be taught to know the things around them—to comprehend the simplest problems of mathematics, and the elementary facts of geology, mineralogy, and botany; and thence to advance, by natural and easy steps, up to the highest principles of natural philosophy, chemistry, and astronomy. The abstract sciences of mind, of morals, and of government follow in the natural order, and readily yield to the student who has thus ascended, by regular steps, up to the high and often inaccessible portals of these sublime branches of knowledge.

But in the mere physical world, what infinity of objects present themselves to bewilder the thoughts of him who would attempt to give only a general outline of what is known at the present day! To what principle of comprehensive generalization shall one have recourse, in order to embrace within the limits of a single address, even the physical, independent of the intellectual and the social? The task would be hopeless even to far abler heads than mine. I shall not make the effort; for too well I know, that I have not the eagle wings of genius, which would bear me to the empyrean heights of this august theme. I can only glance at some few leading topics, which lie obviously in the path of him who pursues the investigation of nature—being the most prominent objects and furnishing the most efficient instruments, in that field of enterprize which is open to the man of education.

From the gravitation of bodies on the earth, we learn the principles which control the movements of all the orbs of the universe; and thus, from the simplest and most familiar occurrences within the sphere of our immediate experience, we are able to rise to the comprehension of the grandest phenomena of nature. The process by

which this is accomplished, is strikingly analogous to that by which the infant is enabled gradually to ascertain the true forms and relations of things within the scope of his vision. Originally every object of sight must present only a simple surface, with colors blended in strange variety and confusion, without any indication of distance or solidity. But by the senses of touch and muscular exertion, the child discovers that his ball is hard and round; and after sufficient experience of this, he learns to connect, by sight, that peculiar shading which belongs to the sphere, with the ideas of rotundity acquired by the other senses. Henceforth, he pronounces such an object spherical, at whatever distance he may distinctly see it. In the same way, he acquires a knowledge of all the varities of solid form which it is possible for bodies to assume. He observes further, that as bodies are removed to a greater or less distance (measured, at first, by the muscular effort to reach, to crawl, or to walk to them) they become less or more vivid in color, and the angle formed by the axes of the two eyes changes by the effort to see it in its new position. By long experience, and an almost unconscious appreciation of these muscular and nervous changes, and their constant association with certain conditions, he learns to judge of relative position and distance by sight alone, forgetting the intermediate process by which the judgment gradually acquired this power.

Precisely in this way has been attained our knowledge of the planetary and sidereal systems. In the infancy of learning, the motions of the planets, and even of the sun and moon, were to the general mind, but a confused series of irregular movements, the nature of which was wholly misunderstood. The original import of the word planet is "*wanderer*," and those motions which in reality are the most certain and regular in all nature, so as to be foretold with great accuracy for ages to come, were long thought to be the most incomprehensible and irregular. "The inconstant moon," had waxed and waned for thousands of years, before its phases were understood. The recurrence of certain similar positions of the heavenly bodies, after certain cycles, gave some indistinct idea, that there was "method in the madness" of these wanderers; but it has only been within a few centuries past, that the dim visions of Pythagoras, in-

dulged before the christian era, have become the realities distinctly seen by Copernicus and Galileo, and still further unfolded and demonstrated by Kepler and Newton. But at this day, the weak and confused sight of infancy has given place to the strong, penetrating, and analyzing vision of manhood. I say, by a process precisely analogous to that by which the child eventually learns to distinguish forms and distances among terrestrial objects around him. The light of a lamp falling upon an orange and seen in various directions explains to the weakest comprehension, all the phases of the moon, of Venus, or of Mercury. These bodies are therefore globes, and they periodically assume certain positions relative to the earth and the sun, which demonstrate the character of their respective orbits. These conclusions, at first so incredible as to awaken the thunders of the Church which proscribed them as impious speculations in opposition to the divine order of things, have now become as familiar to the general apprehension as are the distances and forms of objects to the practised eye of manhood, and with almost the same unconsciousness of the slow and toilsome steps by which they were reached.

It is the muscular sense which enables us to comprehend force or momentum as the result of motion, or of the tendency to motion. This also gives us the idea of inertia as one of the qualities of all bodies. In the same way, therefore, that we apply our knowledge of forms and positions, as acquired by the slow mental process already mentioned, to the positions and movements of the heavenly bodies, explaining their revolutions and periodic times, do we also extend our ideas of inertia and momentum, weighing the sun and the planets as if in a scale, and measuring their respective influence upon each other, in the most extraordinary manner, and with the most amazing results. Thus have we recently seen accomplished that greatest wonder and most magnificent triumph of moden science, the discovery of the planet Neptune by the disturbing effects of its attraction upon Uranus.

"The planets, by their trembling flight,
A hidden influence long had proved;
A sphere was rolling out of sight,
To whose impulse the system moved"

The beauty and wonder of the matter is, that this blind impulse should have been so accurately understood and measured, as to be the means of directing the telescope of the Astronomer to the precise point of the heavens where the disturber was to be found. Whether a fortunate accident, as it has been sometimes characterized, or more probably a legitimate result of accurate calculation, it is, at all events, one of the most beautiful and characteristic results of the immense power and penetration of modern science. And yet, after all, it is as simple a phenomenon and as obvious a deduction from observed facts, as it would be to conclude that the wind is blowing at a certain distant spot where we see the tall trees waving to and fro, though a breathless stillness may prevail in the air immediately around us. It was as if the fisherman with his line in his hand, feeling an impulse from some unknown object in the waters below, should heed the admonition, exert his strength, and take his prey—in more strict analogy still, from the fact, that it is the application of ideas derived from this muscular sense which in the stalwart arm of the fisherman appreciates the force applied to his line, that enables us to comprehend the forces which control the planetary movements. The telescope was turned to the point from which the impulse was supposed to come, and this new denizen of the vast ocean of space was taken in the net of science, fixed in its appropriate orbit, to be henceforth, forever, as familiar to our thoughts as Jupiter or Mars.

Again, it is from the same simple ideas and by the same natural steps, that we rise to such knowledge as we have of that still grander field of existence—the sidereal universe. The naked eye reveals to us but a faint conception of that vast and sublime system of worlds, of which our planetary system is but a simple unit among innumerable others, many of which are, doubtless, of much greater extent and magnificence. The telescope of modern times multiplies these immense objects almost to infinity, until the mind is lost and bewildered in the vain attempt to conceive their whole extent and numbers. Double and triple stars of different colors, revolving about their common centres of gravity; nebulae resolved into countless clusters of separate stars, each perhaps the centre of a system like ours; and these extending into the infinite depths of space as far as instruments of the highest power can penetrate—where even the rays of light,

with their unimaginable volicity have been occupied for centuries in traversing the distance to our earth—these are some of the wonders which modern investigation has developed and rendered familiar to the minds of all. And though this knowledge, like the light of some of those distant stars, may have been thousands of years in making its way down to this generation of men, yet, like that light again, it is now diffused broadly among all civilized communities and has become the common property of humanity. Thus, from the simple conceptions of the child in his limited range of vision and experience, are we enabled to reach the sublimest heights of knowledge. The same principle which enables him to judge of the distance which he seeks to traverse in order to gain his mothers outstretched hand, empowers us to judge of the distance of the remotest star—or rather, I should say, teaches us to know that the distance is beyond calculation or conception. The parallax afforded by the earth's orbit—a base of about one hundred and ninety millions of miles, gives but an uncertain, I believe I may say, conjectural element for the calculation of the distance of the nearest fixed star. But while circumscribed in our knowledge by the limits of our senses—a double limitation, bounded on the one hand by the vanishing point of imperceptible minuteness, and on the other, by the overwhelming power of incomprehensible magnitude—we are yet able to form some idea of that vast cluster of clusters in which our system is placed, and of our relative motion in it. The point of the heavens to which our system seems to be tending by some unknown movement in the illimitable regions of space, is designated by the slow and gradual opening of the interstellar spaces in that direction, and the closing of them in the opposite quarter. Beyond this apparent relative movement, we know not whether this grand aggregation of immense systems has a motion of its own, or whether it is fixed in its general position—whether it is limited in extent, or whether an infinity of space is filled with an infinity of systems, multiplied upon each other in infinite progression, which only the mind of God himself can comprehend.

All our knowledge, of whatever character, is obtained by the same process, the human mind proceeding by direct and natural

steps, from the small to the great, the near to the distant, and from the simple to the complex. Mathematical relations themselves, and all the intricate and powerful processes by which they have been so wonderfully developed, have their origin, likewise, in the simplest perceptions of the senses. These relations exist in nature—they are facts growing out of the very constitution of things as established by the Creator. Their simplest elements are directly received and tested by the senses. The equality of two triangles whose respective sides are equal, is a fact which can only be ascertained originally, by the sight, the touch, and the muscular sense. No abstract reasoning from general axioms can impart a knowledge of these fundamental truths. Such relations, then, being absolute and necessary, existing in the nature of things, it is the effort of the human mind to find out the most difficult of them, by the application of the reasoning powers to the simple elements supplied by the senses. But it is a singular fact—no, it is not singular, for it is a necessary result—that some of the most intricate processes of calculation, involving the higher mathematics, may be wrought out by machinery. Space, numbers, quantities—lines, surfaces, and solids—these are the subjects of all mathematical investigation and analysis. It is therefore plain that these may be measured and estimated by machinery with unerring certainty, if the elements be but correctly combined and arranged. How far human ingenuity may extend this principle and make it available, is another question; though the success of Babbage's celebrated calculating machine would seem to indicate that something practical might possibly grow out of it. But while such inventions may never be made practically useful, they serve to show (what perhaps requires no demonstration) that the principles of mathematics are thus inherent in the nature of things—not creations of the mind, but existing truths to be discovered by it. The celebrated laws of Kepler are necessary consequences of gravitation, diminishing as the square of the distance increases, and of tangential motion of an inert body. Under these conditions, the *radius vector* cannot do otherwise than describe equal areas in equal times. And inasmuch as motion is in lines, enclosing spaces, which are in proportion to squares; while gravitation

emanates from a point in all directions, filling spaces in the form of solid spheres, which have the proportion of cubes—it follows that the squares of the periodic times must be in proportion to the cubes of the distances. Thus it appears, that the solar system, itself, is but a great machine perpetually exhibiting those sublime truths, and working out with unerring certainty those mighty problems, the discovery and solution of which, exert so intensely the highest powers of the human intellect. We have therefore here again arrived at the same result to which we have already adverted in other connexions, that our most exalted knowledge is but the development, extension, and application of those simple elements, which we receive in childhood through the medium of our senses.

Having wandered so far into the boundless regions of space, it is necessary to return to our dwelling place upon earth, in order to start again in a new direction. We are at no loss for a connecting chain to conduct us back from the remotest borders of the visible universe to our central point of observation. This we find in that subtle element of imponderable ether, which is the medium of light, heat, and electricity. I believe the existence of this substance is no longer considered a mere hypothesis, but is set down as one of the certainties of science. First theoretically conceived; as affording the best explanation of the phenomena of light, then applied to explain also those of heat, electricity, and magnetism—so many proofs of its existence have accumulated upon the minds of those who investigate the subject, that it is now no longer permitted to question its reality. It has even been conjectured (if that be not too weak a phrase to express the fact) that an independent proof of its existence, of a nature wholly different from those which first suggested the idea, has been found in the influence of some hidden cause, operating slightly to retard the motions of those light planetary bodies, the comets. This obstruction, plainly shown in the gradual lessening of the orbits of periodic comets, is very naturally ascribed to that elastic and imponderable medium which pervades all nature, occupying not only the vast regions of space enclosing the remotest fixed stars, but also penetrating and filling the minute interstices between the ultimate particles of all bodies. It is the only possible

means of communication between us and the distant parts of the universe; for, by its vibrations, propagated with inconceivable rapidity, the sensation of light is produced upon the optic nerve, and we thus acquire a knowledge of the existence of luminous bodies, though they may be placed at an almost infinite distance from us. This subtle element, almost spiritual in its nature, imperceptible to the sight or the touch, and imponderable as thought, is itself the means of making every thing else visible and perhaps even ponderable; for gravitation may be but a more general form of that magnetism which is admitted to be one of its effects. Thus does this intangible medium become the most active and energetic cause in all nature. It is, in truth, that alone which binds the most distant parts of the universe together by invisible links, conveying impulses from one to the other of the most widely separated bodies, and making every part of universal nature sensitive to the existence of every other part. It is the spirit—the soul of the universe—breathed into its mighty bosom by the same God, who breathed the breath of life into the nostrils of man.

How important a part this great element performs in the minuter operations of nature on the surface of the earth, in its atmosphere, and within its rocky frame and central fires, it is no purpose of mine to attempt to show. Such an attempt would involve an extent of learning and a power of condensation, to which I make no pretensions. But allow me, gentlemen, in very general terms, to glance at the subject with barely sufficient distinctness for the particular purpose which I now have in view.

Some fifty or sixty simple elements, by their innumerable combinations, constitute all that we see or know in the physical world around us. Wonderful and countless are the varieties of form, color, and consistency, produced from these few prolific elements by the agency of that imponderable ether of which I have spoken. The operations of elective affinity, the law of definite proportions, the phenomena of polarity, and the mysterious agency of electricity in the composition and decomposition of bodies—these are some of the most beautiful and wonderful facts presented in the whole scope of physical nature. Elasticity, malleability, transparency, and all

the different useful or interesting qualities of matter, are due to the particular disposition of the ultimate atoms, among themselves, and in relation to that universal ether which pervades them all. That most subtle poison, prussic acid, is composed of the same substances, in slightly different proportions, which combine to form the innocuous thing called sugar, and which, again, in proportions but little varied, re-appear in the form of starch. The hardest of known substances, the diamond, beautiful in its brilliant refractive transparency, is but another form of ordinary carbon. And this again, combined with a comparatively soft metal, iron, renders the latter capable of assuming almost every conceivable variety of temper; from that of a body, inferior in hardness only to the diamond, down to a degree of softness like that of iron; and from almost the brittleness of glass to the toughest and most elastic of substances. But there is a striking peculiarity in the character of the metals, likely to lead, eventually, to results of the highest importance in the economy of life. It seems to be an established fact, that while the metals are the most ponderous of substances, and would seem, therefore, to possess a greater ultimate mass than others, their atoms actually occupy a smaller space, having larger interstices filled with imponderable matter. Hence the facility of motion among their particles, giving rise to their ductility and malleability, and their power of conducting heat and electricity. The facts from which this conclusion is drawn, are thus stated by Dr. Hare, of Philadelphia:

"It has been most sagaciously pointed out by Faraday, that 430 "atoms which form a cube of potassium, in the metallic state, must "occupy nearly six times as much space as the same number of "similar atoms fill when existing in a cube of hydrated oxide of "potassium of the same size, which, besides 700 metallic atoms, "must hold 700 atoms of hydrogen and 1400 of oxygen, in all, 2800 "atoms; whence it follows, that in the metallic cube there must be "room for six times as many atoms as it actually holds." * * * * *

"An enormous quantity, both of the causes of heat and electricity, "exists in metals." * * * * *

"The superiority of the metals, as electrical conductors, may be "the consequence of the pre-eminent abundance of imponderable

" matter entering into their composition, as above alluded to in the " case of potassium."

Glancing, as I have done, gentlemen, over the wide field of enterprise which the physical world presents for the investigations of the educated man, and fixing our eyes momentarily upon some of the prominent objects, we are here arrested by the importance of this element as an instrument of incalculable power in the hands of the human race. If this all-pervading, imponderable substance, performs the office of conducting impulses through the whole extent of the visible universe, at the enormous velocity of 200,000 miles per second; if, as in all probability, is true, it be the agent of gravitation, holding the mighty spheres in their places and controlling the motions of vast and illimitable systems of worlds; if it reduces the great internal mass of our own globe to an ocean of liquid fire, and has strength to rend and convulse the rock-built frame that envelopes the burning flood within, as well as the plastic power to control and carry on the vast amount of chemical and vital operations that take place on its surface; if it evaporates the illimitable waters and fills the atmosphere with clouds; if it starts the hurricane and puts in motion those immense storms that sweep the continent and the ocean by one continued movement; and again, if Nature has stored away in convenient form for the use of man, immense quantities of it in the measureless coal fields and hills of iron, which are found in almost all parts of the earth; and, if the ingenuity of man has already made it a swift messenger upon the telegraphic wire, and harnessed the invisible agent to the steam engine, and forced it to perform the work of millions of men, what limits, I ask, are to be placed to the developments of power likely to result from future investigations and discoveries? From the part which this subtle element performs in the mightiest operations of nature, it is apparent, that no task necessary to be performed by man, is above or beyond its capacity. Who knows, that "the enormous quantity of the cause of heat," which exist in metals, may not be soon developed by some cheap and easy process, so as to multiply, indefinitely, the power of man, at the same time that the expense and danger of its use may be indefinitely diminished. A stream of hydrogen gas

poured upon a piece of sponged platinum, developes such a quantity of heat as to become instantly inflamed; yet the metal is not consumed or wasted. May not this principle be susceptible of application, in some manner, to supersede the present arrangement of the steam engine and to present a safer, more economical, and better disposition of means for the production of power? But if this be only an idle speculation, we have seen something lately presented to the world, which promises to accomplish much in the way of improvement. I allude to what is called the "caloric engine," or the "air engine," by which it is claimed, that heated air can be successfully substituted for steam. I am not sure that I understand, correctly, the principle involved in this supposed improvement; but I take it to be an arrangement by which the conducting and absorbing power of metals arranged in the form of a sponge, is employed to obtain a great economy of heat, by successively imparting it to, and absorbing it from the air as it passes through them. Whether this invention shall succeed or fail, it is evident that man has already received the clue which is to conduct him to the attainment of far higher capacities and powers—I mean physical capacities and powers—than any which have yet been developed.

When man was first created, God commanded him to go forth and "subdue the earth." This was not less prophetic than it was imperative. Already has the ocean become a highway of easier transit than the solid land itself. A comparatively small portion of the earth's surface is yet unknown to man, and this is daily diminishing. Certain regions in the interior of the great continents are yet unknown wildernesses, though fast becoming familiar to the energy of the explorer, and even of the settler; and certain other regions, as yet inaccessible, about the two poles, are all that remain to be subdued by the conquering hand of man. I have ardent faith in his power to accomplish this God-appointed task. The agent to effect it seems to be already in his grasp. If he may never attain the power actually to control the atmosphere, so as to direct its mighty changes, he is at least already in a fair way to acquire an accurate knowledge of its laws—to understand and to foresee the character, extent, direction, and velocity of the mighty storm, so as to evade its force and disarm it of destructive power.

With such a field for the employment of his faculties, and with such instruments of power, no man of liberal education can be in want of great objects worthy to employ his noblest energies for the benefit of mankind, even in reference to their physical condition and wants. The arts, agriculture, mechanics, mining, and commerce, are all susceptible of the application of scientific principles; and, for this purpose alone, independent of the high gratification it would confer upon the mind, a correct knowledge of the physical world, in all the infinite relations of its different parts, and especially those which concern the earth we inhabit, including the vegetable and animal kingdoms, is of an importance scarcely inferior to that which concerns man himself, in his intellectual, moral and social character; because the condition of man, in these higher respects, is almost entirely dependent upon his physical elevation and comfort. And, though this may not be always true with reference to individuals, or relatively, among different races of men, yet, in reference to any single people taken as a whole, the assertion cannot be denied.

Thus, gentlemen, in a somewhat desultory manner, but, I hope, by links of association which may not seem to be altogether unnatural, I have been brought to that department of knowledge which concerns man, his duty and his destiny. I need not say to you, that the sciences derived from these are of a higher order, of infinitely greater complexity, and therefore of far more difficult acquisition, than those which concern only the physical universe. They involve history, society, mind, language, laws, and morals. It is, no doubt, an unquestionable fact, that these important branches of knowledge have proceeded, and must necessarily proceed, "*pari passu*" with the knowledge of material things. No correct understanding of the laws of mind, of the nature and true functions of the human intellect, could have been acquired, so long as the causes of things were sought in speculative, mental inquiries, rather than in patient observation of nature; and society itself could never have made any important progress, so long as philosophers considered it a degradation of the immortal mind to apply the thoughts to the accomplishment of results useful in the economy of life. No more important step in mental science was ever made, than when the Baconian philosophy came to be acknowedged and observed in the investiga-

tion of physical phenomena. I do not mean to say, that Bacon was the first to act upon the principles which he stated so clearly; for, all valuable knowledge of nature possessed before his day, must have been acquired by the means which he characterized as the true philosophical process. But it was his great merit to see distinctly the necessary limits of human knowledge—the legitimate objects and the correct laws of human investigation. A false mental philosophy, discoursing learnedly of *genera* and *species* as actual existences, and of *ideas*, as images possessing form and substance and actually passing into the mind and dwelling there, long operated as a serious obstacle to the discovery of truth. It was only when the world was freed from the dominion of Aristotelian philosophy—from those antiquated errors which blocked up the ways of science, and held the learned world in thraldom for so many ages, coloring and corrupting even christianity itself, that men began to make real progress in both departments of human knowledge. Both advanced together, for they were in a great measure mutually dependent; and an important error in one, rendered inevitable a wide departure from truth and nature, in the other.

But it is not my purpose to enter into any analysis of mental phenomena, or to attempt any metaphysical investigations whatever. My only object is to characterize the present period in the history of man, as that in which the highest and surest principles of science may be applied to the elucidation of all subjects, whether they concern the movements and mutual influences of physical bodies, or of individual men, of societies, and nations. I do not mean to say, that the ultimate truths of these complex, social sciences, have been arrived at and become fixed and settled in the minds of educated men. But, I do say, that they are undergoing experiment and investigation, which cannot fail to result in the most important acquisitions of truth. And it is precisely here, in the growth and change of institutions, in the conflict of opinion, and the great movements and progress of society, that is to be found the noblest field for the exertion of intellectual power. In all ages, this has been the object of thought, and the fruitful theme of discussion, to the greatest minds of their respective eras. But it is only the social

and governmental systems of modern times that begin to reveal the light of a true philosophy, illuminated as they are by the experience of past generations, and inheriting the results of their long continued labor and their inevitable progress.

Looking over the general history of man, from the earliest ages down to the present time, it is apparent to the investigating mind, that there is a law of development for nations, as well as for individuals; and that the combination of powers, the rise and fall of dynasties, and the growth and decay of institutions, are not accidental, spontaneous and irregular, but are governed by fixed laws, and are also directed by Providence to the accomplishment of great and wise purposes. The elements out of which these results grow, by the operation of natural and invariable laws, are the mental and physical capacities, and the distinctive passions, impulses, and dispositions of individual men, nations, and races, modified by climate and local conditions. These causes being put into operation, their legitimate results must inevitably follow. A race of men launched upon the tide of existence, have, by virtue of all the conditions I have mentioned, a determined course to run—a course of progress, which will make its own way and fulfil its own destiny, in accordance with a system of laws as unalterable and as supreme as those which control the physical universe. The vast variety of circumstances and the multiplicity of individual facts entering into the grand problem, may render it so complicated that human wisdom may be utterly incapable of seeing the drift and direction of events, and may be obliged to await the lapse of generations before any clear view of the great movement can be obtained. Like that grand movement of our solar system, which is indicated by an apparent change in the position of the fixed stars, scarcely perceptible after the flight of centuries, the destiny of nations and races, perpetually working itself out by the slow and silent operation of natural causes, is to be determined only after the lapse of long cycles, and by reference to faithful observations recorded in the history of the past, and to those luminous points of hope and promise in the future, which are the guiding stars of humanity.

Complicated as these operating causes may be, they are, neverthe-

less, as I have already said, working out by their own inherent power, an inevitable and necessary result. With as much certainty, with as much regularity, as the planetary system itself, these social systems are exhibiting before us the mighty problem of human destiny, so far as this state of existence is concerned. Our social mathematics have not yet arrived at that degree of perfection, that we can unfold the laws in operation, as readily and as distinctly as we can the physical laws to which I have referred. But those laws do exist, and it is our task to find them out—a great, a noble task, which, in its final accomplishment, is destined to confer upon man a moral and social power, as stupendous for the promotion of good, as his knowledge of physical laws has conferred upon him, in that humbler department of science.

While these complex laws are as yet imperfectly understood, there are, nevertheless, to be observed in all nations some striking and prominent peculiarities of character or condition so generally prevailing, or some visible occurrences of so commanding an influence, as to enable the philosophic mind to perceive with some certainty the direction which development will take, at least for a limited period. It is this fact—that amidst the confused operation of complicated causes, and the perpetual conflict of opposing forces in society, some insight into the future may be obtained—some idea, more or less clear, of the tendency of events, and the means by which they may be wisely modified or controlled—which renders it interesting and important to inquire, how far individual effort and individual character can accomplish any thing towards the direction of these grand social phenomena—how far the great events of history may be controlled by the errors and crimes, or by the genius and wisdom, of rulers and of distinguished men in all the walks of life. It would be vain to deny that these have an important bearing upon the interests of mankind. But, on the other hand, it is equally clear that the character and purposes of distinguished men are themselves controlled, in a great measure, by the condition of that society in which they are born and reared. Nay, it ought more properly to be said, that the genius and whole character of any individual are the offspring—the creature, of that society itself. The mind of every man, so far as training and

education go, is necessarily dependent upon surrounding circumstances, while even its original faculties have been controlled, and in fact made what they are, by the character and condition of its successive generations of ancestors. Occasionally some gifted individual will arise, and, by a combination of fortunate conditions, be enabled to concentrate in his own mind the light which is diffused among a whole generation of men; in him it may be so intense and far-reaching, that it will require many years to bring up his own generation to the pinnacle of progress upon which he stands. Yet he has done nothing more than to gather the scattered rays of knowledge and experience, which existed in the community from whose bosom he springs. He is but the gleaner, who comes along in the path of the passing generations and picks up the neglected sheafs which are the product of their toil and suffering—all the more precious and valuable because they have been overlooked by the unthinking crowd—but only valuable because they are the results of their life and labor. Indeed, nothing else is valuable, so far as social and govermental science is concerned. Institutions must be the growth of the society in which they are established; they cannot be transplanted and forced upon it, without convulsion and danger. Each generation is the parent of that which succeeds it, not less in the institutions which it bequeathes, than in the individuals to whom the bequest is transmitted.

Hence it is that great men, in order to exert any extraordinary power over the people whom they seek to control, must become the representatives of the general will and inclination, or of the general capacities and undeveloped energies of the mass of men, to whose exertions and purposes they propose to impart any particular direction. Otherwise they can accomplish nothing. They will either be in advance of the generation whom they wish to lead, and therefore premature in their attempts; or they will be utterly at war with the spirit of the nation, which no individual or combination of individuals can change, and will therefore completely fail in their plans, however wise and proper these may be in themselves, independently of the peculiar circumstances characteristic of the people to whom it is attempted to apply them. The instruments to be used to effect

any proposed object, are the physical, moral, and intellectual energies of the people whom they operate upon, and of course their policy must be shaped to conform to these, and the results to be accomplished, must be limited by them. So true is it in every sense, in reference to the origin of political powers, as well as the sources of its efficiency and strength—

"That mountains issue out of plains, and not
"Plains out of mountains; and so, likewise, kings
"Are of the people, not the people of kings."

The same is equally true of all commanding characters, whether they wield the authority of the State, or whether they be only men,

"Who shed great thoughts
"As easily as an oak looseneth its golden leaves
"In a kindly largess to the soil it grew on—
"Whose rich dark ivy thoughts, sunned o'er with love,
"Flourish around the deathless stems of their names—
"Whose names are ever on the world's broad tongue
"Like sound upon the falling of a force—
"Whose words, if winged, are with angel's wings—
"Who play upon the heart as on a harp,
"And make our eyes bright as we speak of them—
"Whose hearts have a look southwards, and are open
"To the whole noon of nature."

The oak draws the substance for its "golden leaves," from the very air whose gentle breath loosens them for the fall, and from the very soil upon which they drop their "kindly largess." So these men

"Whose great thoughts possess us like a passion
"Through every limb and the whole heart; whose words
"Haunt us, as eagles haunt the mountain air,"

derive all their greatness and their power over men, from the general soil of humanity, and from that universal sympathy and spirit of intellect which pervade and envelope the society in which they live, as the air envelopes the whole earth, as well as the oak which it nourishes. Their work is not to create, but only to elaborate and modify existing elements, so as to make them more tractable

and generous—to gather the principles of fertility from the very rocks and stones, and from the depths of the soil, in order to spread them on the surface and make them teem with flowers and fruits.

The destiny of every society, therefore, is dependent upon the nature of the inherent forces which reside in it, or, in other words, the character of the individuals who compose it. Among the infinite variety of these, all individual capacities will necessarily be moulded somewhat in conformity to the general characteristics. The aims of leading men will be directed towards those achievements which lie most naturally in the path of the nation, and to which its powers are most appropriate. Great men are gifted with the capacity, not to create, but to see more clearly, the general will and the general power, to give them proper direction, and to stimulate them to their highest exertions. But the primary impulse which controls and fixes the ultimate destiny of any people, comes from that divine power which laid the foundations of the earth and established the elements of all human conditions, prescribing for men and nations a certain path, which, by the operation of regular and unerring causes, they must necessarily pursue. I do not presume to touch the great question of the freedom of the human will. That is altogether unnecessary for the purpose I have in view, for that question is not involved in my argument. Evidently, the exertions of the will, so far as they bear upon the interests of society, are subject to two limitations or qualifications. They are themselves controlled by *motives*, and they are limited by the capabilities of that society to which they are applied. Volitions are not spontaneous and accidental; they are determined by desires which are the motive powers. Whether men have liberty to choose between the conflicting force of opposite motives, or whether the one or the other *must* prevail by necessity, is of no importance to my present purpose, however the question may perplex the religious world and all metaphysical inquirers. It is enough for my object to know that all possible motives which can influence the will of man, in reference to social interests, necessarily spring from the existing character and condition of the society in which his lot is cast. And it is equally true, that those exertions cannot, directly or indirectly, affect the social state to an extent

greater than the sum of the individual capacities which constitute the whole—in other words, it is not in the power of any man, however great and commanding may be his genius, to originate and to put into operation causes which do not exist in the bosom of the society of which he is a member. The literature, the laws, the institutions of a people, and whatever else may affect their condition and progress, are all but the necessary and inevitable result of the causes originally set in operation by the divine power—of that development which constitutes the law of humanity, as it travels, generation after generation, along the path of ages.

The contemplation of society in this particular point of view, beginning at its foundation and considering its structure and organization, as well as its law of development and progress, is eminently curious and interesting. The analogy which it bears to the material world and to the vital systems of living bodies, is perfect and complete; thus showing, in a remarkable manner, the concord and unity which prevail throughout the whole creation. Even unorganized bodies are built up of separate atoms, bound to each other by mutual attractions which connect them with every other body in the universe, and which thus make them a part of that grand organization which multiplies world upon world, and system upon system, in infinite extension. Each particle is separate and distinct; not in contact, but having the interstices filled with that subtle medium, which is the agent of organization and which thus renders all bodies kindred to each other, whether they be parts of the same individual mass, or separated at immense distances. So in the world of life. All living bodies, animal or vegetable, commence with the simple cell, and, by gradual development, which is nothing more than adding cell to cell and multiplying organization upon organization, gradually grow up to that complicated mass of organs, which constitute the living being, whether it be the tree, the animal, or the man. The ultimate atoms which make up the respective organs of these bodies, corresponding to the individuals and institutions of society, are not in contact, fused into a solid mass, any more than the individuality of men is swallowed up in society. But to the eyes of myriads of living creatures, these atoms are as far apart, as

distinctly separate, moving and acting in their own spheres, as men are, comparatively, to their own senses. Physical, chemical, and vital laws conglomerate these atoms into organs, which again react upon each other by still more complicated laws, binding themselves together into the living, acting, thinking being, called man. Thus also these atoms of humanity, acting upon each other by the moral and social laws of nature, exhibit their vital force in the organic form of institutions, which are themselves again bound together by their mutual relations and dependencies, constituting by their union the higher being, called society.

As the subtle ether, which is recognized as the cause of light and heat and electricity, is the medium of connexion between distant bodies, and doubtless performs an important part in the phenomena of organization and life, so *mind*, a still subtler and more penetrating element, is that which constitutes the universal medium of communication and connexion in society. I do not speak of mind as the result of organization, or as being *material* in the sense in which that word is usually understood. On the contrary, I hold it to be a distinct creation—a substance clothed with its own wonderful and immortal faculties, though exhibiting itself in this state of being, only in connexion with an organization of a specific character.

It is to the sympathies of the minds of men—their common thoughts, desires, and passions, operating mutually upon each other, that are due all the relations and connexions of men in society. If there were no attractions and repulsions—no polarities among the particles of matter—there could be no organizations, no masses, no systems—no light, no heat. So if there were no common sympathies—loves, friendships, envies, and aversions, among men, there could be no society. But the means of connexion, the agents of necessary and inevitable combination and union, as well as of force and activity, exist in both—the one in that unintelligent, but wonderful medium, denominated ether; the other, in that intelligent, self-luminous, and conscious substance, the human mind.

It is not merely in these general particulars that the analogy and unity prevail. There is scarcely one of the great or interesting

phenomena of physical nature, that has not its perfect analogue in the social world. There is a singular chemical and vital law, which causes bodies in a certain condition, or having a tendency to certain changes of combination, to communicate that condition or that tendency to other bodies with which they come in contact, just as the magnet communicates its polarity to ferruginous bodies within the sphere of its influence. Such, in physics, are the phenomena of fermentation and decay, perpetually tendfng to extend themselves to contiguous bodies; and, in vital organizations, the communication of contagious diseases, and even of conditions of weakness or health. So among men, passion of any kind has a tendency to generate the same feeling in all other minds. Through any large assemblage of men, fright, or mirth, or anger will run like the waves of the sea, swaying the vast multitude to and fro, as if it were moved by a common impulse. Vice is proverbially contagious; and the example of virtue never fails to exert a powerful influence. Revolutions in neighboring nations are apt to spread from one to the other; and institutions, good or bad, are not altogether confined in their influences to the people who have established them. Even distant nations, in the present age, begin to act upon each other with forces quite as distinct and powerful, as those which operate between the distant heavenly bodies. Every day this mutual influence is becoming more and more perceptible, and soon the statesmen of every land will be forced to acknowledge the relations arising from them, and to accept the obligations which they necessarily impose.

The great geological phenomena which have marked the history of our globe, and by which it has been developed to its present condition; and the great changes, which, in the lapse of time, the power of the elements is still effecting—the rise or subsidence of continents; the abrasion of mountains; the disintegration of rocks; the conveyance of material by rivers and ocean tides, depositing here a stratum of gravel, there one of sand, and still farther on, one composed of the lighter and finer particles of clay, all eventually hardened or melted into rocks; and the coral islands built up in the sea by the labors of countless millions of minute insects—all these mighty physical operations, together with those accompanying vital ones, effected by the

vegetable kingdom, and by which the surface of the earth is prepared for cultivation—are but the counterparts of those social changes which have been going on from the creation of man to the present day, stratifying the social elements, crystalizing them into institutions, fusing them into nations, and again breaking them up by convulsions, preparatory to new organizations; but through them all, and doubtless as the design and end of them all, bringing out that resplendent glory of modern civilization, which now smiles upon and blesses the world, like the verdure, and flowers, and fruits, which spring from the teeming bosom of the earth.

Thus, gentlemen, have I cast a rapid glance over the field of social science, entering, however, into none of its particular departments, but attempting only to mark the general character of the subject and to designate those universal laws, within which all the phenomena of history and of human progress must be comprised. All that concerns the condition and destiny of man in this life, and all the agencies he can bring to bear in order to control or modify them, (aside from religion and divine influences which I have not attempted to discuss) must be natural agencies, or rather natural laws. These again are the subjects of experiment and observation, of analytical investigation and synthetic combination, precisely to the same extent, and with the prospect of producing the same results, as, by similar processes in the physical world. As we cannot alter the laws which control physical phenomena, neither can we those which, with equal certainty and regularity, control the moral and social. We may alter the conditions under which the former operate, and by such means obtain new and often happy results; but these results are, nevertheless, still in exact conformity with the unchanging laws of nature. So also, by the interposition of political or municipal regulations, and of moral or social institutions, we may vary the conditions upon which the fundamental laws of society must proceed in their operation; but we can no more change those laws themselves, than we can annihilate the physical law of gravitation. Then it is apparent, and this is the conclusion to which all my argument tends, that the true subjects for the investigations of educated men, are these natural and unalterable laws of society

which are to be discovered and understood by the same means we apply to the discovery of physical truth, viz: by patient observation and study of all that has occurred among men, of the experience of all nations and all societies, and the precise conditions under which these phenomena have occurred. To this standard—to the test of results obtained in this way—must be faithfully adjusted all literature, all science, all laws and institutions, designed for the benefit of the human race. Otherwise, vain and mischievous theories will usurp the place of established truth, and suffering and sorrow will be the consequence of the error. Of course, I do not mean to exclude from these investigations, those conjectural, or theoretical conclusions which must be adopted as the basis of experiment and observation; for it is by such devices, and by such alone, that progress can be made in any science. But such conjectures must never be made the basis of established systems until they are fully tested and demonstrated to be true. They are useful as instruments for making our way along the dark and untried path of the future—as mirrors or lenses, by which we are enabled to throw the concentrated light of former ages to some short distance before us, so that we can tread confidently, though cautiously, upon the ground thus illumined by the wisdom of the past, which constitutes the true foresight of the present. There is a region somewhat undefined between the present and the future, over which glimmers a faint light like that of the dawn, casting upon us the shadows of coming events and revealing indistinctly the radiance of great discoveries. The most important ideas that have ever been unfolded in the progress civilization, have generally appeared in some obscure and indistinct form to a whole generation; sometimes they have been matured and given to the world by separate and independent investigators, nearly at the same moment of time; and frequently they appear dimly shadowed forth in the writings of many upon whom the light of truth may not have shone out fully and clearly, though some scattered rays of it have evidently reached them, giving promise of the speedy realization of its full glory.

Is there not something of this kind going on at the present time? Recent experiments and investigations, carried; in many instances, to

foolish extremes, and sometimes discredited by attempts at deception, render it more than probable that there is a mysterious connexion between the minds of men, the nature and extent of which, now far from being understood, will soon be fully revealed. I allude to those singular phenomena which go under the name of animal magnetism. Whatever tricks and impositions may occasionally have been played off upon the credulity of men, the candid enquirer cannot doubt that there is some great undiscovered natural law, at the bottom of those facts which have been observed and sufficiently verified. At present we can only say, that under certain circumstances, one man, by the power of his will alone, exercises a strange influence over the mind and body of another. Considered abstractly and apart from the novelty of the fact, there is nothing in it at all incompatible with the general laws of humanity. On the contrary, it seems to me not a whit more strange that one man, by a simple volition, should be able to render the muscles of another rigid and immoveable, than that he should, by a look or a word, convulse him with laughter or paralyze him with fear. The only difference in the two cases is, that the one is familiar to our experience, while the other is rare and unfamiliar. But I apprehend, that the ultimate cause of the one is to be as easily understood as the other.

It is much to be regretted that the investigation of these singular phenomena is mostly in the hands of charlatans and adventurers—men whose object is gain, rather than the discovery of truth. Undoubtedly the very facts themselves are vague and uncertain, while the law involved is utterly unknown. Such must continue to be the case, until the subject shall be withdrawn from the hands of those who now mostly monopolize it, and submitted to the true process of philosophical investigation. That the truth will be ultimately made plain, and that great secrets in the nature of life and intellect will be developed, seems to me to be not only highly probble, but almost absolutely certain. What influence these discoveries, the light of which is already glimmering in the distance, will have upon the interests of society, in elucidating the laws of progress and explaining even the philosophy of the great events of history, it is impossible to foresee. They may have such a bearing. Un-

connected as these dissimilar subjects may at the first glance appear to be, they may ultimately be found to have quite as direct a relation, as the falling of an apple and the revolutions of the moon, or the rising of the barometer and the great meterological changes of the atmosphere. When, however, the principle is carried further, and communications are supposed to be had with the inhabitants of the spiritual world—when the embodied intellect of living men is assumed to communicate directly with the disembodied spirits of the dead—it seems to me to be going beyond the limits of the most liberal credulity. Yet, a well balanced mind may well be staggered at the question, whether the phenomenon of so wide a delusion among intelligent and respectable men as that which is spreading on this subject, is not of itself quite as remarkable and as incredible, as would be even the truth of the spiritual communications, of which they imagine themselves to be the recipients. There is something in the whole matter indescribably strange. And whatever may be the result---whether the supposed spiritual communications be realities or mere delusions—they will form an important chapter in the history of human nature. They will serve to elucidate the power of imagination and the wanderings of the minds of living men, if they do not give us information of the condition and occupations of the dead. In either case, they are worthy of attention and investigation. We may well treat the vain pretensions of imposters with contempt; but even the delusions and errors of men, who, in other respects, are wise and good, are entitled to our respect. Perhaps we, ourselves, may be too incredulous and may thus exclude from our minds the light of important truths. Let us wait patiently, if not work diligently, in the confidence that we have not yet reached the goal of human progress in any department of life, and that nature will yet vouchsafe to us higher and nobler truths, than have ever yet been revealed to our astonished vision.

Gentlemen, Alumni of the Columbian College, I have thus fulfilled, according to my opportunity and feeble ability, the task which your request has imposed upon me. I regret that I could not do it more worthily, so as to have afforded you a better entertainment upon this interesting occasion, as well as to have reflected

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higher credit upon our Alma Mater. Yet, gentlemen, though I may through my own fault or misfortune, have profited less than any of you by the teachings of this venerated institution, and may have been far less entitled to the degree with which I was honored, I yield to none of you, in the gratitude I feel for her fostering care, or in the ardor and sincerity of my prayer for her prosperity. The political condition of this District is by no means favorable to the development of institutions of any kind. The activity, the enterprise, and the marvellous progress of other portions of our happy Union, present themselves in singular, but not unnatural contrast, with the stagnation which prevails here. The example of my native town of Alexandria, now rising so vigorously and manfully from the ashes of that long decay, into which she had fallen almost of necessity, proves that political liberty and self-reliance are the true foundations of all prosperity. Far be it from me, under present circumstances, to broach any controverted question. Though profoundly convinced of the truth of my remark in reference to your political condition, I am not insensible of the fact, that this condition cannot easily be changed, and that it has many advantages which counteract the evils necessarily arising out of it. Leaving all these considerations aside, however, I am satisfied that proper measures, energetically pursued, will avail to lift this institution to a prouder position than it has ever yet occupied. There is no good reason why Columbian College should be permitted to languish and to perish in the midst of the growing population of this city—the political centre of a free and mighty nation—where so many objects of high interest are to be found, giving unusual advantages to an institution of the kind. It is the duty of the people of the District to foster and cherish an institution of so much importance to them. Let them exhibit the warm interest they ought to feel in its prosperity—let them first put their own shoulders to the wheel—and there cannot be a doubt that all necessary assistance will come, and that Columbia College will survive long to be an ornament and a blessing to the Metropolis of this glorious Republic.

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